

# SEQUENCE LISTING

<110> Bristol-Myers Squibb Company

<120> POLYNUCLEOTIDES ENCODING A NOVEL TESTIS-SPECIFIC TUBULIN  
TYROSINE-LIGASE-LIKE PROTEIN, BGS42

<130> D0283 NP

<150> U.S. 60/394,725

<151> 2002-07-09

<160> 102

<170> PatentIn version 3.2

<210> 1

<211> 1838

<212> DNA

<213> Homo sapiens

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<221> CDS

<222> (153)..(1775)

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gtgctgtcct ttcagaagac ttccggcgca cc atg gca tcc agc atc ctc aag	173
Met Ala Ser Ser Ile Leu Lys	
1 5	
tgg gtg gtc agc cac cag agc tgc agc agg agc agc aga agc aag ccc	221
Trp Val Val Ser His Gln Ser Cys Ser Arg Ser Ser Arg Ser Lys Pro	
10 15 20	
agg gac cag agg gag gag gcc ggg agc agc gac ctg agc agc agg caa	269
Arg Asp Gln Arg Glu Glu Ala Gly Ser Ser Asp Leu Ser Ser Arg Gln	
25 30 35	
gat gct gaa aat gct gag gca aag ctc agg ggc ctc ccg ggg cag ctt	317
Asp Ala Glu Asn Ala Glu Ala Lys Leu Arg Gly Leu Pro Gly Gln Leu	
40 45 50 55	
gtg gac atc gcg tgc aag gtg tgc cag gcc tac ctg ggg cag ctg gag	365
Val Asp Ile Ala Cys Lys Val Cys Gln Ala Tyr Leu Gly Gln Leu Glu	
60 65 70	
cat gag gac atc gac acg tca gca gat gcc gtg gag gac ctc act gag	413
His Glu Asp Ile Asp Thr Ser Ala Asp Ala Val Glu Asp Leu Thr Glu	
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gcc gag tgg gag gac ctg acc cag cag tac tac tcc ctc gtt cat ggc	461
Ala Glu Trp Glu Asp Leu Thr Gln Gln Tyr Tyr Ser Leu Val His Gly	

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gat gct ttc atc tcc aat tca aga aat tac ttt tgc cag tgc cag gct Asp Ala Phe Ile Ser Asn Ser Arg Asn Tyr Phe Ser Gln Cys Gln Ala 105 110 115			509
ctg ctg aat aga atc acg tct gtg aac cct cag acg gac att gac ggg Leu Leu Asn Arg Ile Thr Ser Val Asn Pro Gln Thr Asp Ile Asp Gly 120 125 130 135			557
ctc cgg aac atc tgg att ata aag ccc gcg gcc aag tcc cgg ggc cga Leu Arg Asn Ile Trp Ile Ile Lys Pro Ala Ala Lys Ser Arg Gly Arg 140 145 150			605
gac ata gtg tgc atg gac cgt gtg gag gag atc ctg gag ctg gca gct Asp Ile Val Cys Met Asp Arg Val Glu Glu Ile Leu Glu Leu Ala Ala 155 160 165			653
gca gac cac cct ctt tcc agg gac aac aag tgg gtg gtc cag aag tac Ala Asp His Pro Leu Ser Arg Asp Asn Lys Trp Val Val Gln Lys Tyr 170 175 180			701
atc gag acg ccg ctg ctc atc tgt gac acc aag ttc gac atc aga cag Ile Glu Thr Pro Leu Leu Ile Cys Asp Thr Lys Phe Asp Ile Arg Gln 185 190 195			749
tgg ttc ctc gtc acg gac tgg aac ccc ctg acc atc tgg ttc tac aag Trp Phe Leu Val Thr Asp Trp Asn Pro Leu Thr Ile Trp Phe Tyr Lys 200 205 210 215			797
gag agt tac ttg cgg ttc tca act cag cgc ttc tcc ctg gac aag ctg Glu Ser Tyr Leu Arg Phe Ser Thr Gln Arg Phe Ser Leu Asp Lys Leu 220 225 230			845
gac agc gcc atc cac ctg tgc aac aac gcc gtc cag aag tac ctg aag Asp Ser Ala Ile His Leu Cys Asn Asn Ala Val Gln Lys Tyr Leu Lys 235 240 245			893
aat gat gtg ggc cgc agc ccc ctg ctg ccc gca cac aac atg tgg acc Asn Asp Val Gly Arg Ser Pro Leu Leu Pro Ala His Asn Met Trp Thr 250 255 260			941
agc acc agg ttc cag gag tac ctg cag cgc cag ggc cgt ggc gcc gtg Ser Thr Arg Phe Gln Glu Tyr Leu Gln Arg Gln Gly Arg Gly Ala Val 265 270 275			989
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atg aag gtg gcc cag gac cac gtg gag cct cgc aag aac agc ttt gag Met Lys Val Ala Gln Asp His Val Glu Pro Arg Lys Asn Ser Phe Glu 300 305 310			1085
ctc tac ggg gct gac ttc gtc ctt ggg agg gac ttc agg ccc tgg ctg Leu Tyr Gly Ala Asp Phe Val Leu Gly Arg Asp Phe Arg Pro Trp Leu 315 320 325			1133

atc gag atc aat tcc agc ccc acc atg cac ccg tcc acg ccg gtc acg Ile Glu Ile Asn Ser Ser Pro Thr Met His Pro Ser Thr Pro Val Thr 330 335 340	1181
gcc cag ctg tgt gca cag gtg cag gag gac acc atc aag gtg gcc gtg Ala Gln Leu Cys Ala Gln Val Gln Glu Asp Thr Ile Lys Val Ala Val 345 350 355	1229
gac cgc agc tgt gac atc ggc aac ttc gag ctc ctg tgg agg cag ccg Asp Arg Ser Cys Asp Ile Gly Asn Phe Glu Leu Leu Trp Arg Gln Pro 360 365 370 375	1277
gtg gtt gag ccg ccc cca ttc agc ggg tcc gac ctc tgc gtg gcg ggc Val Val Glu Pro Pro Phe Ser Gly Ser Asp Leu Cys Val Ala Gly 380 385 390	1325
gtc agt gtg agg aga gcc agg agg cag gtg ctg ccc gtc tgc aac ctc Val Ser Val Arg Arg Ala Arg Arg Gln Val Leu Pro Val Cys Asn Leu 395 400 405	1373
aag gcc tcg gcc tcg ctg ttg gac gcg cag ccg ctg aag gca cgg ggc Lys Ala Ser Ala Ser Leu Leu Asp Ala Gln Pro Leu Lys Ala Arg Gly 410 415 420	1421
ccc tcg gcc atg cca gac cct gcc cag gga ccc cca tca cca gct ctc Pro Ser Ala Met Pro Asp Pro Ala Gln Gly Pro Pro Ser Pro Ala Leu 425 430 435	1469
cag cgg gac ttg gga ctg aag gaa gag aag ggg ctc ccc ctg gcc ttg Gln Arg Asp Leu Gly Leu Lys Glu Glu Lys Gly Leu Pro Leu Ala Leu 440 445 450 455	1517
ctg gca ccc tta agg ggg gca gcc gag agc ggt gga gcc gca cag ccc Leu Ala Pro Leu Arg Gly Ala Ala Glu Ser Gly Gly Ala Ala Gln Pro 460 465 470	1565
acc cgc acc aaa gct gct ggg aag gtg gag ctc ccg gcc tgc ccc tgt Thr Arg Thr Lys Ala Ala Gly Lys Val Glu Leu Pro Ala Cys Pro Cys 475 480 485	1613
cgc cac gtg gac agt cag gcc cca aac acc ggt gtc ccc gta gcc cag Arg His Val Asp Ser Gln Ala Pro Asn Thr Gly Val Pro Val Ala Gln 490 495 500	1661
ccc gcc aaa agc tgg gat cca aac cag cta aat gcg cac ccg ctg gag Pro Ala Lys Ser Trp Asp Pro Asn Gln Leu Asn Ala His Pro Leu Glu 505 510 515	1709
cct gtg ctg cgg ggc ctg aag aca gca gag ggc gcg ctg cgt ccg ccg Pro Val Leu Arg Gly Leu Lys Thr Ala Glu Gly Ala Leu Arg Pro Pro 520 525 530 535	1757
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1838

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Ser Asp Leu Ser Ser Arg Gln Asp Ala Glu Asn Ala Glu Ala Lys Leu  
35 40 45

Arg Gly Leu Pro Gly Gln Leu Val Asp Ile Ala Cys Lys Val Cys Gln  
50 55 60

Ala Tyr Leu Gly Gln Leu Glu His Glu Asp Ile Asp Thr Ser Ala Asp  
65 70 75 80

Ala Val Glu Asp Leu Thr Glu Ala Glu Trp Glu Asp Leu Thr Gln Gln  
85 90 95

Tyr Tyr Ser Leu Val His Gly Asp Ala Phe Ile Ser Asn Ser Arg Asn  
100 105 110

Tyr Phe Ser Gln Cys Gln Ala Leu Leu Asn Arg Ile Thr Ser Val Asn  
115 120 125

Pro Gln Thr Asp Ile Asp Gly Leu Arg Asn Ile Trp Ile Ile Lys Pro  
130 135 140

Ala Ala Lys Ser Arg Gly Arg Asp Ile Val Cys Met Asp Arg Val Glu  
145 150 155 160

Glu Ile Leu Glu Leu Ala Ala Ala Asp His Pro Leu Ser Arg Asp Asn  
165 170 175

Lys Trp Val Val Gln Lys Tyr Ile Glu Thr Pro Leu Leu Ile Cys Asp  
180 185 190

Thr Lys Phe Asp Ile Arg Gln Trp Phe Leu Val Thr Asp Trp Asn Pro  
 195 200 205

Leu Thr Ile Trp Phe Tyr Lys Glu Ser Tyr Leu Arg Phe Ser Thr Gln  
 210 215 220

Arg Phe Ser Leu Asp Lys Leu Asp Ser Ala Ile His Leu Cys Asn Asn  
 225 230 235 240

Ala Val Gln Lys Tyr Leu Lys Asn Asp Val Gly Arg Ser Pro Leu Leu  
 245 250 255

Pro Ala His Asn Met Trp Thr Ser Thr Arg Phe Gln Glu Tyr Leu Gln  
 260 265 270

Arg Gln Gly Arg Gly Ala Val Trp Gly Ser Val Ile Tyr Pro Ser Met  
 275 280 285

Lys Lys Ala Ile Ala His Ala Met Lys Val Ala Gln Asp His Val Glu  
 290 295 300

Pro Arg Lys Asn Ser Phe Glu Leu Tyr Gly Ala Asp Phe Val Leu Gly  
 305 310 315 320

Arg Asp Phe Arg Pro Trp Leu Ile Glu Ile Asn Ser Ser Pro Thr Met  
 325 330 335

His Pro Ser Thr Pro Val Thr Ala Gln Leu Cys Ala Gln Val Gln Glu  
 340 345 350

Asp Thr Ile Lys Val Ala Val Asp Arg Ser Cys Asp Ile Gly Asn Phe  
 355 360 365

Glu Leu Leu Trp Arg Gln Pro Val Val Glu Pro Pro Pro Phe Ser Gly  
 370 375 380

Ser Asp Leu Cys Val Ala Gly Val Ser Val Arg Arg Ala Arg Arg Gln  
 385 390 395 400

Val Leu Pro Val Cys Asn Leu Lys Ala Ser Ala Ser Leu Leu Asp Ala  
 405 410 415

Gln Pro Leu Lys Ala Arg Gly Pro Ser Ala Met Pro Asp Pro Ala Gln  
 420 425 430

Gly Pro Pro Ser Pro Ala Leu Gln Arg Asp Leu Gly Leu Lys Glu Glu  
 435 440 445

Lys Gly Leu Pro Leu Ala Leu Leu Ala Pro Leu Arg Gly Ala Ala Glu  
 450 455 460

Ser Gly Gly Ala Ala Gln Pro Thr Arg Thr Lys Ala Ala Gly Lys Val  
 465 470 475 480

Glu Leu Pro Ala Cys Pro Cys Arg His Val Asp Ser Gln Ala Pro Asn  
 485 490 495

Thr Gly Val Pro Val Ala Gln Pro Ala Lys Ser Trp Asp Pro Asn Gln  
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Leu Asn Ala His Pro Leu Glu Pro Val Leu Arg Gly Leu Lys Thr Ala  
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 cgg ggc cga gac ata gtg tgc atg gac cgt gtg gag gag atc ctg gag 96  
 Arg Gly Arg Asp Ile Val Cys Met Asp Arg Val Glu Glu Ile Leu Glu  
 20 25 30  
 ctg gca gct gca gac cac cct ctt tcc agg gac aac aag tgg gtg gtc 144  
 Leu Ala Ala Ala Asp His Pro Leu Ser Arg Asp Asn Lys Trp Val Val  
 35 40 45  
 cag aag tac atc gag acg ccg ctg ctc atc tgt gac acc aag ttc gac 192  
 Gln Lys Tyr Ile Glu Thr Pro Leu Leu Ile Cys Asp Thr Lys Phe Asp

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ttc tac aag gag agt tac ttg cgg ttc tca act cag cgc ttc tcc ctg Phe Tyr Lys Glu Ser Tyr Leu Arg Phe Ser Thr Gln Arg Phe Ser Leu 85 90 95			288
gac aag ctg gac agc gcc atc cac ctg tgc aac aac gcc gtc cag aag Asp Lys Leu Asp Ser Ala Ile His Leu Cys Asn Asn Ala Val Gln Lys 100 105 110			336
tac ctg aag aat gat gtg ggc cgc agc ccc ctg ctg ccc gca cac aac Tyr Leu Lys Asn Asp Val Gly Arg Ser Pro Leu Leu Pro Ala His Asn 115 120 125			384
atg tgg acc agc acc agg ttc cag gag tac ctg cag cgc cag ggc cgt Met Trp Thr Ser Thr Arg Phe Gln Glu Tyr Leu Gln Arg Gln Gly Arg 130 135 140			432
ggc gcc gtg tgg ggc agc gtc atc tac ccg tcc atg aag aag gcc atc Gly Ala Val Trp Gly Ser Val Ile Tyr Pro Ser Met Lys Lys Ala Ile 145 150 155 160			480
gcc cac gcc atg aag gtg gcc cag gac cac gtg gag cct cgc aag aac Ala His Ala Met Lys Val Ala Gln Asp His Val Glu Pro Arg Lys Asn 165 170 175			528
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ccc tgg ctg atc gag atc aat tcc agc ccc acc atg cac ccg tcc acg Pro Trp Leu Ile Glu Ile Asn Ser Ser Pro Thr Met His Pro Ser Thr 195 200 205			624
ccg gtc acg gcc cag ctg tgt gca cag gtg cag gag gac acc atc aag Pro Val Thr Ala Gln Leu Cys Ala Gln Val Gln Glu Asp Thr Ile Lys 210 215 220			672
gtg gcc gtg gac cgc agc tgt gac atc ggc aac ttc gag ctc ctg tgg Val Ala Val Asp Arg Ser Cys Asp Ile Gly Asn Phe Glu Leu Leu Trp 225 230 235 240			720
agg cag Arg Gln			726

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Arg	Gly	Arg	Asp	Ile	Val	Cys	Met	Asp	Arg	Val	Glu	Glu	Ile	Leu	Glu	20	25	30	
Leu	Ala	Ala	Ala	Asp	His	Pro	Leu	Ser	Arg	Asp	Asn	Lys	Trp	Val	Val	35	40	45	
Gln	Lys	Tyr	Ile	Glu	Thr	Pro	Leu	Leu	Ile	Cys	Asp	Thr	Lys	Phe	Asp	50	55	60	
Ile	Arg	Gln	Trp	Phe	Leu	Val	Thr	Asp	Trp	Asn	Pro	Leu	Thr	Ile	Trp	65	70	75	80
Phe	Tyr	Lys	Glu	Ser	Tyr	Leu	Arg	Phe	Ser	Thr	Gln	Arg	Phe	Ser	Leu	85	90	95	
Asp	Lys	Leu	Asp	Ser	Ala	Ile	His	Leu	Cys	Asn	Asn	Ala	Val	Gln	Lys	100	105	110	
Tyr	Leu	Lys	Asn	Asp	Val	Gly	Arg	Ser	Pro	Leu	Leu	Pro	Ala	His	Asn	115	120	125	
Met	Trp	Thr	Ser	Thr	Arg	Phe	Gln	Glu	Tyr	Leu	Gln	Arg	Gln	Gly	Arg	130	135	140	
Gly	Ala	Val	Trp	Gly	Ser	Val	Ile	Tyr	Pro	Ser	Met	Lys	Lys	Ala	Ile	145	150	155	160
Ala	His	Ala	Met	Lys	Val	Ala	Gln	Asp	His	Val	Glu	Pro	Arg	Lys	Asn	165	170	175	
Ser	Phe	Glu	Leu	Tyr	Gly	Ala	Asp	Phe	Val	Leu	Gly	Arg	Asp	Phe	Arg	180	185	190	
Pro	Trp	Leu	Ile	Glu	Ile	Asn	Ser	Ser	Pro	Thr	Met	His	Pro	Ser	Thr	195	200	205	
Pro	Val	Thr	Ala	Gln	Leu	Cys	Ala	Gln	Val	Gln	Glu	Asp	Thr	Ile	Lys	210	215	220	



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Arg Gln

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Arg Gly Arg Gly Ile Met Cys Met Asp His Leu Glu Glu Met Leu Lys  
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Leu Val Asn Gly Asn Pro Val Val Met Lys Asp Gly Lys Trp Val Val  
 35 40 45

Gln Lys Tyr Ile Glu Arg Pro Leu Leu Ile Phe Gly Thr Lys Phe Asp  
 50 55 60

Leu Arg Gln Trp Phe Leu Val Thr Asp Trp Asn Pro Leu Thr Val Trp  
 65 70 75 80

Phe Tyr Arg Asp Ser Tyr Ile Arg Phe Ser Thr Gln Pro Phe Ser Leu  
 85 90 95

Lys Asn Leu Asp Asn Ser Val His Leu Cys Asn Asn Ser Ile Gln Lys  
 100 105 110

His Leu Glu Asn Ser Cys His Arg His Pro Leu Leu Pro Pro Asp Asn  
 115 120 125

Met Trp Ser Ser Gln Arg Phe Gln Ala His Leu Gln Glu Met Gly Ala  
 130 135 140

Pro Asn Ala Trp Ser Thr Ile Ile Val Pro Gly Met Lys Asp Ala Val  
 145 150 155 160

Ile His Ala Leu Gln Thr Ser Gln Asp Thr Val Gln Cys Arg Lys Ala  
 165 170 175

Ser Phe Glu Leu Tyr Gly Ala Asp Phe Val Phe Gly Glu Asp Phe Gln  
180 185 190

Pro Trp Leu Ile Glu Ile Asn Ala Ser Pro Thr Met Ala Pro Ser Thr  
195 200 205

Ala Val Thr Ala Arg Leu Cys Ala Gly Val Gln Ala Asp Thr Leu Arg  
210 215 220

Val Val Ile Asp Arg Met Leu Asp Arg Asn Cys Asp Thr Gly Ala Phe  
225 230 235 240

Glu Leu Ile Tyr Lys Gln Pro Val Thr Thr Ser Pro Ala Ser Thr Pro  
245 250 255

Arg Pro Ser Cys Leu Leu Pro Met Tyr Ser Asp Thr Arg Ala Arg Ser  
260 265 270

Ser Asp Asp Ser Thr Ala Ser Trp Trp Ala Leu Arg Pro Cys Arg Pro  
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Gln Ala Arg Pro  
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20 25 30

Asp Asn Pro Arg Phe Asn Leu Met Leu Gly Glu Arg Asn Arg Leu Pro  
35 40 45

Phe Gly Arg Leu Gly His Glu Pro Gly Leu Met Gln Leu Val Asn Tyr  
50 55 60

Tyr Arg Gly Ala Asp Lys Leu Cys Arg Lys Ala Ser Leu Val Lys Leu  
65 70 75 80

Ile Lys Thr Ser Pro Glu Leu Ala Glu Ser Cys Thr Trp Phe Pro Glu  
85 90 95

Ser Tyr Val Ile Tyr Pro Thr Asn Leu Lys Thr Pro Val Ala Pro Ala  
100 105 110

Gln Asn Gly Ile His Pro Pro Ile His Ser Ser Arg Thr Asp Glu Arg  
115 120 125

Glu Phe Phe Leu Thr Ser Tyr Asn Lys Lys Lys Glu Asp Gly Glu Gly  
130 135 140

Asn Val Trp Ile Ala Lys Ser Ser Ala Gly Ala Lys Gly Glu Gly Ile  
145 150 155 160

Leu Ile Ser Ser Glu Ala Thr Glu Leu Leu Asp Phe Ile Asp Asn Gln  
165 170 175

Gly Gln Val His Val Ile Gln Lys Tyr Leu Glu Arg Pro Leu Leu Leu  
180 185 190

Glu Pro Gly His Arg Lys Phe Asp Ile Arg Ser Trp Val Leu Val Asp  
195 200 205

His Gln Tyr Asn Ile Tyr Leu Tyr Arg Glu Gly Val Leu Arg Thr Ala  
210 215 220

Ser Glu Pro Tyr His Thr Asp Asn Phe Gln Asp Lys Thr Cys His Leu  
225 230 235 240

Thr Asn His Cys Ile Gln Lys Glu Tyr Ser Lys Asn Tyr Gly Lys Tyr  
245 250 255

Glu Glu Gly Asn Glu Met Phe Phe Glu Glu Phe Asn Gln Tyr Leu Thr  
260 265 270

Ser Ala Leu Asn Ile Thr Leu Glu Ser Ser Ile Leu Leu Gln Ile Lys  
275 280 285

His Ile Ile Arg Ser Cys Leu Leu Ser Val Glu Pro Ala Ile Ser Thr

290                      295                      300  
 Arg His Leu Pro Tyr Gln Ser Phe Gln Leu Phe Gly Phe Asp Phe Met  
 305                      310                      315                      320  
 Val Asp Glu Asp Leu Lys Val Trp Leu Ile Glu Val Asn Gly Ala Pro  
 325                      330                      335  
 Ala Cys Ala Gln Lys Leu Tyr Ala Glu Leu Cys Gln Gly Ile Val Asp  
 340                      345                      350  
 Ile Ala Ile Ala Ser Val Phe Pro Pro Pro Asp Ala Glu Gln Gln Gln  
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 Gln Gln Pro Pro Pro Ala Ala Phe Ile Lys Leu  
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 20                      25                      30  
 Ala Glu Leu Arg His Leu Asp Thr Gln Val Gln Arg Cys Glu Asp Ile  
 35                      40                      45  
 Leu Gln Gln Leu Gln Ala Val Val Pro Gln Ile Asp Met Glu Gly Asp  
 50                      55                      60  
 Arg Asn Ile Trp Ile Val Lys Pro Gly Ala Lys Ser Arg Gly Arg Gly  
 65                      70                      75                      80  
 Ile Met Cys Met Asp His Leu Glu Glu Met Leu Lys Leu Val Asn Gly  
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 Asn Pro Val Val Met Lys Asp Gly Lys Trp Val Val Gln Lys Tyr Ile  
 100                      105                      110

Glu	Arg	Pro	Leu	Leu	Ile	Phe	Gly	Thr	Lys	Phe	Asp	Leu	Arg	Gln	Trp	115	120	125	
Phe	Leu	Val	Thr	Asp	Trp	Asn	Pro	Leu	Thr	Val	Trp	Phe	Tyr	Arg	Asp	130	135	140	
Ser	Tyr	Ile	Arg	Phe	Ser	Thr	Gln	Pro	Phe	Ser	Leu	Lys	Asn	Leu	Asp	145	150	155	160
Asn	Ser	Val	His	Leu	Cys	Asn	Asn	Ser	Ile	Gln	Lys	His	Leu	Glu	Asn	165	170	175	
Ser	Cys	His	Arg	His	Pro	Leu	Leu	Pro	Pro	Asp	Asn	Met	Trp	Ser	Ser	180	185	190	
Gln	Arg	Phe	Gln	Ala	His	Leu	Gln	Glu	Met	Gly	Ala	Pro	Asn	Ala	Trp	195	200	205	
Ser	Thr	Ile	Ile	Val	Pro	Gly	Met	Lys	Asp	Ala	Val	Ile	His	Ala	Leu	210	215	220	
Gln	Thr	Ser	Gln	Asp	Thr	Val	Gln	Cys	Arg	Lys	Ala	Ser	Phe	Glu	Leu	225	230	235	240
Tyr	Gly	Ala	Asp	Phe	Val	Phe	Gly	Glu	Asp	Phe	Gln	Pro	Trp	Leu	Ile	245	250	255	
Glu	Ile	Asn	Ala	Ser	Pro	Thr	Met	Ala	Pro	Ser	Thr	Ala	Val	Thr	Ala	260	265	270	
Arg	Leu	Cys	Ala	Gly	Val	Gln	Ala	Asp	Thr	Leu	Arg	Val	Val	Ile	Asp	275	280	285	
Arg	Met	Leu	Asp	Arg	Asn	Cys	Asp	Thr	Gly	Ala	Phe	Glu	Leu	Ile	Tyr	290	295	300	
Lys	Gln	Pro	Val	Thr	Thr	Ser	Pro	Ala	Ser	Thr	Pro	Arg	Pro	Ser	Cys	305	310	315	320
Leu	Leu	Pro	Met	Tyr	Ser	Asp	Thr	Arg	Ala	Arg	Ser	Ser	Asp	Asp	Ser	325	330	335	

Thr Ala Ser Trp Trp Ala Leu Arg Pro Cys Arg Pro Gln Ala Arg Pro  
 340 345 350

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Ile Asn Asn Phe Glu Lys Arg Gly Trp Val Gln Val Thr Glu Asn Glu  
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Asp Trp Asn Phe Tyr Trp Met Ser Val Gln Thr Ile Arg Asn Val Phe  
 35 40 45

Ser Val Glu Ala Gly Tyr Arg Leu Ser Asp Asp Gln Ile Val Asn His  
 50 55 60

Phe Pro Asn His Tyr Glu Leu Thr Arg Lys Asp Leu Met Val Lys Asn  
 65 70 75 80

Ile Lys Arg Tyr Arg Lys Glu Leu Glu Lys Glu Gly Ser Pro Leu Ala  
 85 90 95

Glu Lys Asp Glu Asn Gly Lys Tyr Leu Tyr Leu Asp Phe Val Pro Val  
 100 105 110

Thr Tyr Met Leu Pro Ala Asp Tyr Asn Leu Phe Val Glu Glu Phe Arg  
 115 120 125

Lys Ser Pro Ser Ser Thr Trp Ile Met Lys Pro Cys Gly Lys Ala Gln  
 130 135 140

Gly Lys Gly Ile Phe Leu Ile Asn Lys Leu Ser Gln Ile Lys Lys Trp  
 145 150 155 160

Ser Arg Asp Ser Lys Thr Ser Ser Phe Val Ser Gln Ser Asn Lys Glu  
 165 170 175

Ala Tyr Val Ile Ser Leu Tyr Ile Asn Asn Pro Leu Leu Ile Gly Gly  
 180 185 190

Arg Lys Phe Asp Leu Arg Leu Tyr Val Leu Val Ser Thr Tyr Arg Pro  
 195 200 205

Leu Arg Cys Tyr Met Tyr Lys Leu Gly Phe Cys Arg Phe Cys Thr Val  
 210 215 220

Lys Tyr Thr Pro Ser Thr Ser Glu Leu Asp Asn Met Phe Val His Leu  
 225 230 235 240

Thr Asn Val Ala Ile Gln Lys His Gly Glu Asp Tyr Asn His Ile His  
 245 250 255

Gly Gly Lys Trp Thr Val Ser Asn Leu Arg Leu Tyr Leu Glu Ser Thr  
 260 265 270

Arg Gly Lys Glu Val Thr Ser Lys Leu Phe Asp Glu Ile His Trp Ile  
 275 280 285

Ile Val Gln Ser Leu Lys Ala Val Ala Pro Val Met Asn Asn Asp Lys  
 290 295 300

His Cys Phe Glu Cys Tyr Gly Tyr Asp Ile Ile Ile Asp Asp Lys Leu  
 305 310 315 320

Lys Pro Trp Leu Ile Glu Val Asn Ala Ser Pro Ser Leu Thr Ser Ser  
 325 330 335

Thr Ala Asn Asp Arg Ile Leu Lys Tyr Asn Leu Ile Asn Asp Thr Leu  
 340 345 350

Asn Ile Ala Val Pro Asn Gly Glu Ile Pro Asp Cys Lys Trp Asn Lys  
 355 360 365

Ser Pro Pro Lys Glu Val Leu Gly Asn Tyr Glu Ile Leu Tyr Asp Glu  
 370 375 380

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 Ser Gly Gly Ala Ala Gln Pro Thr Arg Thr Lys Ala Ala Gly Lys Val  
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 Glu Leu Pro Ala Cys Pro Cys Arg His Val Asp Ser Gln Ala Pro Asn  
 485                      490                      495  
 Thr Gly Val Pro Val Ala Gln Pro Ala Lys Ser Trp Asp Pro Asn Gln  
 500                      505                      510  
 Leu Asn Glu His Pro Leu Glu Pro Val Leu Arg Ser Leu Lys Thr Ala  
 515                      520                      525  
 Glu Gly Ala Leu Arg Pro Pro Pro Gly Gly Lys Gly Ser  
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 20                      25                      30  
 Ala Phe Ile Ser Asn Ser Arg Asn Tyr Phe Ser Gln Cys Gln Ala Leu  
 35                      40                      45  
 Leu Asn Arg Ile Thr Ser Val Asn Pro Gln Thr Asp Ile Asp Gly Leu  
 50                      55                      60  
 Arg Asn Ile Trp Ile Ile Lys Pro Ala Ala Lys Ser Arg Gly Arg Asp  
 65                      70                      75                      80  
 Ile Val Cys Met Asp Arg Val Glu Glu Ile Leu Glu Leu Ala Ala Ala  
 85                      90                      95

Asp His Pro Leu Ser Arg Asp Asn Lys Trp Val Val Gln Lys Tyr Ile  
 100 105 110

Glu Thr Pro Leu Leu Ile Cys Asp Thr Lys Phe Asp Ile Arg Gln Trp  
 115 120 125

Phe Leu Val Thr Asp Trp Asn Pro Leu Thr Ile Trp Phe Tyr Lys Glu  
 130 135 140

Ser Tyr Leu Arg Phe Ser Thr Gln Arg Phe Ser Leu Asp Lys Leu Asp  
 145 150 155 160

Ser Ala Ile His Leu Cys Asn Asn Ala Val Gln Lys Tyr Leu Lys Asn  
 165 170 175

Asp Val Gly Arg Ser Pro Leu Leu Pro Ala His Asn Met Trp Thr Ser  
 180 185 190

Thr Arg Phe Gln Glu Tyr Leu Gln Arg Gln Gly Arg Gly Ala Val Trp  
 195 200 205

Gly Ser Val Ile Tyr Pro Ser Met Lys Lys Ala Ile Ala His Ala Met  
 210 215 220

Lys Val Ala Gln Asp His Val Glu Pro Arg Lys Asn Ser Phe Glu Leu  
 225 230 235 240

Tyr Gly Ala Asp Phe Val Leu Gly Arg Asp Phe Arg Pro Trp Leu Ile  
 245 250 255

Glu Ile Asn Ser Ser Pro Thr Met His Pro Ser Thr Pro Val Thr Ala  
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Arg Ser Cys Asp Ile  
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Arg Gln Trp Phe Leu Val Thr Asp Trp Asn Pro Leu Thr  
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Ser Phe Glu Leu Tyr Gly Ala Asp Phe Val  
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<400> 21

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Pro Leu Thr Ile Trp Phe Tyr Lys Glu Ser Tyr Leu Arg Phe Ser Thr  
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Gln Arg Phe Ser Leu Asp Lys Leu Asp Ser Ala Ile His Leu Cys Asn  
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Asn

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<213> Rattus norvegicus

<400> 22

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Pro Leu Thr Ile Trp Phe Tyr Lys Glu Ser Tyr Leu Arg Phe Ser Thr  
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Gln Arg Phe Ser Leu Asp Lys Leu Asp Ser Ala Ile His Leu Cys Asn  
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Asn

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<212> PRT  
<213> Rattus norvegicus

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Ala Gln Val Gln Glu Asp Thr Ile Lys Val  
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Asn Ala His Pro Leu Glu Pro Val Leu Arg  
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<400> 25

Leu Lys Thr Ala Glu Gly Ala Leu Arg Pro Pro Pro Gly Gly Lys Gly  
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Ser

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<400> 26

Ile Arg Leu Asp Glu Arg Tyr Arg Leu Leu His Gln Ala Ile Asn His  
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Ile	Lys	Arg	Gln	Gln	Lys	Asp	Phe	Gly	Arg	Lys	Gly	Asp	Glu	Phe	Asp			
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Phe	Leu	Pro	Arg	Thr	Phe	Ile	Leu	Pro	Thr	Asp	Leu	Arg	Glu	Phe	Val			
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Asp	Tyr	Phe	Glu	Lys	Arg	Glu	Arg	Glu	Gly	Gln	Asp	Asn	Thr	Trp	Ile			
65					70					75					80			
Val	Lys	Pro	Ser	Ala	Ser	Ala	Arg	Gly	Arg	Gly	Ile	Arg	Ile	Thr	Asn			
				85					90					95				
Lys	Leu	Ser	Gln	Ile	Pro	Lys	Trp	Val	Asp	Asp	Phe	Lys	Asp	Asn	Pro			
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Phe	Val	Ser	Gln	Ile	Gln	Arg	Arg	Pro	Leu	Val	Val	Gln	Lys	Tyr	Ile			
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Glu	Arg	Pro	Leu	Leu	Ile	Asp	Gly	Glu	Asp	Val	Gly	Lys	Arg	Lys	Phe			
	130					135					140							
Asp	Leu	Arg	Leu	Tyr	Val	Leu	Val	Thr	Ser	Val	Asp	Pro	Leu	Arg	Ile			
145					150					155					160			
Tyr	Val	Tyr	Arg	Glu	Gly	Leu	Leu	Arg	Phe	Ala	Ser	Val	Lys	Tyr	Ser			
				165					170					175				
Pro	Leu	Ser	Asp	Leu	Asp	Asp	Val	Glu	Met	His	Leu	Thr	Asn	Tyr	Ser			
			180					185					190					
Ile	Gln	Lys	Lys	Ser	Ser	Asn	Tyr	Ser	Arg	Leu	Asn	Glu	Asp	Tyr	Asn			
		195					200					205						
Glu	Pro	Val	Gly	His	Lys	Trp	Ser	Leu	Gln	Asn	Leu	Trp	Leu	Tyr	Leu			
	210					215						220						
Glu	Glu	Met	Gly	Ile	Asp	Lys	Glu	Glu	Ile	Trp	Leu	Gln	Ile	Glu	Ser			
225					230					235					240			

Ile Ile Ile Lys Thr Ile Leu Ala Ala Glu Ile Val Glu Ala Ser Arg  
245 250 255

Leu Asn Val Ala Pro Leu Tyr Asn Cys Phe Glu Leu Tyr Gly Phe Asp  
260 265 270

Ile Met Leu Lys Trp Asp Asp Asp Glu Asn Leu Lys Pro Trp Leu Leu  
275 280 285

Glu Val Asn Ala Ser Pro Ser Leu His Ser Thr Thr Lys Leu Asp Ala  
290 295 300

Glu Leu Lys Ala Pro Leu Ile Arg Asp Val Leu Asn Leu Ala Leu Ser  
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Val Val Pro Pro Asp Lys Glu Lys Asp Ile  
325 330

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<400> 31

Gln Ser Cys Ser Arg Ser Ser Arg Ser Lys Pro Arg Asp  
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<210> 32  
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<400> 32

Gly Ser Ser Asp Leu Ser Ser Arg Gln Asp Ala Glu Asn  
1 5 10

<210> 33  
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<400> 33

Tyr Leu Arg Phe Ser Thr Gln Arg Phe Ser Leu Asp Lys  
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<210> 34  
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<400> 34

His Asn Met Trp Thr Ser Thr Arg Phe Gln Glu Tyr Leu  
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<210> 35

<211> 13

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<400> 35

Ser Val Ile Tyr Pro Ser Met Lys Lys Ala Ile Ala His  
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<210> 36

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<400> 36

Gln Val Gln Glu Asp Thr Ile Lys Val Ala Val Asp Arg  
1 5 10

<210> 37

<211> 13

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Cys Val Ala Gly Val Ser Val Arg Arg Ala Arg Arg Gln  
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<210> 38

<211> 14

<212> PRT

<213> Homo sapiens

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Ser Ser Asp Leu Ser Ser Arg Gln Asp Ala Glu Asn Ala Glu  
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<210> 39

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<213> Homo sapiens

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His Glu Asp Ile Asp Thr Ser Ala Asp Ala Val Glu Asp Leu  
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<400> 40

Ala Val Glu Asp Leu Thr Glu Ala Glu Trp Glu Asp Leu Thr  
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<400> 41

Ser Val Asn Pro Gln Thr Asp Ile Asp Gly Leu Arg Asn Ile  
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<400> 42

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<210> 43  
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Glu Pro Pro Pro Phe Ser Gly Ser Asp Leu Cys Val Ala Gly  
 1 5 10

<210> 44  
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<400> 44

Leu Lys Ala Ser Ala Ser Leu Leu Asp Ala Gln Pro Leu Lys

1 5 10

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<400> 45

Asp His Val Glu Pro Arg Lys Asn Ser Phe Glu Leu Tyr Gly  
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<400> 47

Pro Pro Pro Phe Ser Gly Ser Asp Leu Cys Val Ala Gly Val Ser Val  
1 5 10 15

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<400> 48

Leu Lys Glu Glu Lys Gly Leu Pro Leu Ala Leu Leu Ala Pro Leu Arg  
1 5 10 15

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 <213> Bacteriophage T7

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<210> 54  
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 <212> DNA  
 <213> Bacteriophage SP6

<400> 54  
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<210> 55  
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Asp Tyr Lys Asp Asp Asp Asp Lys	

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5

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 tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca aagccgcggg 240  
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 atccaagcga catcgccgtg gagggggaga gcaatgggca gccggagaac aactacaaga 540  
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 acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat gaggctctgc 660  
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<400> 74  
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<210> 76  
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<400> 76  
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